Chapter 4. Cumulative Effects

This chapter evaluates cumulative effects associated with the proposed action. The TRPA Code of Ordinances (5.8.B [3]) and NEPA require that federal agencies consider the cumulative effects of proposals under their review. Specifically, federal agencies must analyze the cumulative environmental consequences of the proposed action or alternatives plus other past, present, and reasonably foreseeable future actions. Cumulative effects may result from individually minor but collectively significant decisions made over time and affecting lands within the action area (40 CFR 1508.7).

According to CEQA guidelines, *cumulative effects* refers to two or more individual effects, which, when considered together, are considerable or which compound or increase other environmental impacts. The cumulative effect from several projects is the change in the environment, which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative effects can result from individually minor but collectively significant projects taking place over a period of time (Section 15355).

Based on discussions with staff at Placer County, Caltrans, and TRPA, there are numerous activities planned within the Tahoe Basin in the near future. Many are related to regional efforts to implement EIP projects necessary to attain and maintain environmental thresholds or ongoing maintenance of the highway system. Scheduling of individual projects to minimize overlapping construction activities and mitigate for regional traffic/circulation concerns requires ongoing coordination through project proponents, TRPA, and Nevada Department of Transportation, and Caltrans.

4.1 Projects Identified Within the Kings Beach Community

Recent and current Caltrans, Placer County, and TRPA projects within the Kings Beach community are listed below in Tables 4-1 through 4-3. TRPA's EIP strategy is to achieve the environmental goals for the Lake Tahoe Basin. The EIP strategy builds on

the regulatory and capital improvement approaches that have been underway within the Region for more than 10 years. This strategy is designed to accomplish, maintain, or exceed multiple environmental goals and to develop a more integrated, proactive approach to environmental management. Key to this strategy is reliance upon partnerships within all portions of the community, including the private sector, and local, state, and federal government.

Table 4-1. Recent and Current Projects—Kings Beach, California

Caltrans Transportation Projects			
Project Title	County	Roadway	
PLA 28	Placer	SR 28	
PLA 267	Placer	SR 267	

Caltrans Water Quality Improvement Projects		
Project Name	Construction Year	Project Boundaries
SR 28	2008–2010	SR 28 from Tahoe State Park (0.8 mile east of SR 89) to SR 267
SR 28	2007	SR 28 from Chipmunk Street to California/Nevada Stateline
SR 89	2010–2012	Alpine County Line to SR 50
SR 89	2010–2012	Junction SR 50/89 to Cascade Road
SR 89	2010–2012	Cascade Road to north of Eagle Falls viaduct
SR 89	2010–2012	Meeks Creek to Placer County Line
SR 89	2009–2011	El Dorado County Line to Junction SR 89/28
SR 89	2007-2008	Junction SR 89/28 to Squaw Valley Road
SR 50	2010–2011	0.2 mile to 1.1 miles each of Echo Summit
SR 50	2010–2012	Meyers Road to Incline Road
SR 50	2010–2012	South Lake Tahoe Airport to Junction SR 50/89
SR 50	2010–2012	Sky Run Boulevard to Stateline
SR 50	2010–2012	Junction SR 50/89 to Trout Creek
SR 267	2009	Stewart Way to Junction SR 267/28
SR 267	2007	SR 28 to 2.8 miles north of SR 28

Other Caltrans Projects		
Project Location	Construction Year	Description
SR 50	To be determined	Bridge and barrier rail improvements on Echo Summit
SR 50	2010–2011	Upgrade rock barrier from Echo Summit to 1.3 miles east of Echo Summit
SR 50	2010–2011	Streetscape/drainage improvements from Trout Street to Ski Run Boulevard
SR 50	2009	Signal improvement at Sierra Boulevard
SR 50	To be determined	Traffic improvements at South Lake Tahoe "Y" at Junction SR 50/89
SR 89	2011	Vista Point improvements from 0.2 mile north of Elizabeth Drive to 0.9 mile north of Fanny Bridge
SR 89	To be determined	Realign/replace Fanny Bridge from 1.0 miles south of Fanny Bridge to 0.9 mile north of Fanny Bridge
SR 89	2009	Install traffic signal at Alpine Meadows Road
SR 89	2007	Rock wall repair at Emerald Bay Viaduct
Various locations	2009	Install traffic operation system

Placer County Projects		
Project Title	Lead Agency	SCH#
Brook Avenue Parking Facility (PDSA-T2004 0102)	Placer County Planning Department	NA
Salmon Avenue Parking Facility (PDSD T20060649	Placer County Planning Department	NA
Minnow Avenue Parking Facility (PDSD T20060685	Placer County Planning Department	NA
Kings Beach CCIP Parking Compensation	Placer County Planning Department	NA
Coordinated Resource Management and Planning for the Endangered Plant, Tahoe Yellow Cress	Placer County Planning Department	NA
Restoration Project, Coon Street	Placer County Planning Department	NA
North Tahoe Beach Center Replacement Project	Placer County Planning Department	NA
Red Wolf Lodge, Phase V (increase units per acre from 15 to 18)	Placer County Planning Department	NA
Erosion Control, Beaver Street	Placer County Planning Department	NA
Replace signals at SR 28 and 267	Placer County Planning Department	NA
Commercial Core Improvement Project	Placer County Planning Department	2002112087
KB Mixed Use Village	Placer County Planning Department	2005082096
KB Student Activity Center	Tahoe Truckee Unified School District	2002042094

Placer County Projects		
Project Title	Lead Agency	SCH#
Area Restoration Projects	Tahoe Conservancy	2001068008
Water Quality Improvement Project, Planning Grant	Tahoe Conservancy	2000128334
Fire Hazard Reduction Project	Tahoe Conservancy	2000068001
KB Elementary School Expansion	Tahoe Truckee Unified School District	1997107177
		1997042042
KB Elementary School/Adopt-A-Watershed Program	Tahoe Conservancy	1996104035
Site Protection Projects	Tahoe Conservancy	1995101616
School Restoration Project	Tahoe Conservancy	1994107639
Restoration Enhancement Project	Tahoe Conservancy	1993103936
Recreation Enhancements	Tahoe Conservancy	1993022021
Erosion Control Project	Tahoe Conservancy	1992101561
Recreation Enhancement Project	Tahoe Conservancy	1990104093
Recreation Enhancement Project	Tahoe Conservancy	1990102403

Table 4-2. Summary of TRPA EIP Project—Kings Beach, California

TRPA Threshold	EIP Project Name	EIP Project #
Air Quality/Trans	Class 2 SR 28 to SR 267 Summit	748
Air Quality/Trans	Placer County Transit Improvements	816
Fisheries	East of Kings Beach Boat Ramp Spawning Habitat Restoration	530
Fisheries	Griff Creek - Stream Restoration	410
Fisheries	Griff Creek	658
Recreation	Kings Beach SRA Public Pier	619
Soil Conservation/SEZ	California State Parks	351
Water Quality	Kings Beach Commercial	10060
Water Quality	Kings Beach Industrial	733
Water Quality	Kings Beach Residential Area Treatment - Phase II	15
Water Quality	SR 267 at Intersection of SR 28	997

 Table 4-3.
 Summary of Nevada Department of Transportation Projects—Kings Beach Area

Project Title	Lead Agency
Erosion Control – SR 28 from SR28/SR431 Intersection to Nevada California Border	Nevada Department of Transportation

4.2 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive types of agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

CEQA Guidelines, Section 15130, describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts, under CEQA, can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts, under NEPA, can be found in *40 CFR 1508.7* of the CEQ Regulations.

4.3 Assessment of Cumulative Effects

The assessment of cumulative effects includes short-term, temporary effects associated with construction activities and long-term effects associated with project operation. Each of these types of cumulative effects is discussed separately.

4.3.1 Short-Term Cumulative Effects

Potential temporary effects resulting from the proposed action will be limited to the construction phase of the project. Dust controls, noise controls, BMPs to control erosion and water resources, and avoidance measures for special status wildlife and plant species and their habitat will be implemented during construction activities to minimize potential impacts on these resources. Public notifications of traffic interruptions will also be implemented during the construction phase of the proposed action.

Short-term, indirect cumulative effects on traffic would occur during the construction of the selected SR 28 build alternative. The impact would be related to the rerouting of traffic and/or delays associated with construction. However, once construction is complete, this impact would not have substantial effects or would have substantial effects that can be mitigated as improved traffic capacity via the alternative is implemented.

Projects occurring simultaneously with the proposed action may add to temporary impacts. Therefore, coordination with agencies with jurisdiction over other projects within the action area is needed. Caltrans requires a CTMP for all construction activities on the state highway system. Where several consecutive or linking projects or activities within a region or corridor create a cumulative need for a CTMP, Caltrans coordinates individual CTMPs or develops a single interregional CTMP. A CTMP, when implemented, results in minimized project-related traffic delay and accidents by the effective combination of public and motorist information, demand management, incident management, system management, alternate route strategies, construction strategies, and other strategies. Furthermore, CTMPs are designed to reduce the amount of significant delay time due to lane closures and construction related activity. Significant delay time is

30 minutes above normal recurring traffic delay on the existing facility or the delay threshold set by the district traffic manager, whichever is less. The Caltrans traffic management unit has indicated that SR corridors on the north shore of Lake Tahoe might require a cumulative delay time of less than 30 minutes per CTMP guidelines. Tables 4-1 through 4-3 list proposed Caltrans, Placer County, and TRPA projects. Through its CTMP process, Caltrans will ensure that cumulative construction activities of the projects listed in Tables 4-1 through 4-3 will result in cumulative delay times of 30 minutes or less on the state highway system, including within the Kings Beach area.

Some project features will contribute longer lasting effects. The proposed action is not anticipated to adversely affect any viewsheds in the area, as new features added by the project are anticipated to blend in with the existing environment. Furthermore, temporarily disturbed areas of natural vegetation, including wetlands, riparian habitat, and trees, must be restored according to the standards provided in the TRPA *Code of Ordinances* (Section IX, Chapter 77). Chapter 77 provides standards for revegetation following activities that disturb vegetation and soils. Trees that die or fall over as a result of root damage must be compensated for by replanting new trees at a ratio not less than 1:1 (inches dbh of trees lost: inches dbh of trees planted). These revegetation activities will be required upon completion of the project.

Some cumulative effects may occur if other projects also remove vegetation prior to the reestablishment of vegetation by this project. However, this impact is speculative and is not likely to be substantial, given the projects listed above.

The proposed action would generate short-term effects on biological resources. With mitigation, those effects can be reduced or eliminated. Consequently, with biological mitigation, the proposed action's short-term cumulative effects on biological resources would not be substantial. Further discussion of cumulative biological effects is described below in *Section 4.3.2, Long-Term Cumulative Effects*.

The cumulative effects of the independent projects are not expected to generate adverse effects in terms of temporary employment increases, housing shortages, or competition for public services.

4.3.2 Long-Term Cumulative Effects

4.3.2.1 Air Quality

The proposed action's long-term air quality impacts were all found to have no substantial effects. The incremental emissions associated with the three build alternatives would not differ substantially from the no-build alternative. Alternatives 2 and 4 would have slightly higher emissions due to idling associated with increased congestion during peak travel periods. However, the increase in emissions associated with this congestion is relatively minor and would be outweighed by the decrease in emissions over time as cleaner, lower-emitting vehicles replace higher-emitting vehicles. Additional land use projects in the Kings Beach area would also generate vehicle trips and associated emissions. The air quality analysis represents a cumulative impact analysis because it uses the traffic projections developed for this project. The traffic projections assumed development of community plans within the Tahoe Basin along with traffic resulting from buildout of community plans for Truckee and the Martis Valley. Therefore, the air analysis evaluates the cumulative effects of regional growth on air emissions. That analysis finds that the project, when combined with other projects in the area, would not result in significant cumulative effects on air quality.

The carbon monoxide modeling for the proposed action found that existing and future concentrations from vehicle idling would not exceed existing state, federal, or TRPA standards. This modeling was based on traffic volumes that assumed cumulative growth throughout the northern Lake Tahoe area. Consequently, neither of the alternatives would result in a substantial cumulative effect.

4.3.2.2 Cultural Resources

The cultural and historic resources analysis finds that each build alternative would either have no substantial effects on cultural and historic resources or substantial effects that can be mitigated. Several other projects are proposed for the Kings Beach area. These projects would also be required to conduct environmental review and would be required to mitigate any significant cultural or historic resource impacts. Consequently, with appropriate mitigation, each of the three build alternatives would have no substantial direct effects on cultural or historical resources and, when considered with other proposed projects in the Kings Beach area, would have no substantial cumulative effects.

4.3.2.3 Social Environment

The social environment analysis finds that each build alternative would have no substantial effects or substantial effects that can be mitigated. Those social effects are primarily limited to economic effects during project construction. No other proposed projects in the Kings Beach area are expected to have significant effects on the Kings Beach social environment. Consequently, with appropriate mitigation, each of the three build alternatives would have no substantial direct social effects, and when considered with other proposed projects, would have no substantial cumulative effects.

4.3.2.4 Hydrology

The hydrology analysis finds that each build alternative would either have no substantial effects or substantial effects that can be mitigated. The proposed action drainage facilities will be designed and built to handle flows from cumulative development of the entire Griff Creek water basin. This is because the project represents a component of the Kings Beach Watershed Improvement Project. Consequently, the project, when considered with other cumulative development in the area, would not result in significant cumulative hydrology impacts.

4.3.2.5 Hazardous Waste

The hazardous waste analysis finds that each build alternative would either have no substantial effects or substantial effects that can be mitigated. There are no other proposed projects in the Kings Beach vicinity that would be likely to have significant hazardous impacts. Consequently, with appropriate mitigation, each of the three build alternatives, when combined with other proposed projects, would have no substantial cumulative effects with respect to exposing humans to hazardous waste and hazardous materials.

4.3.2.6 Traffic

The traffic analysis included in *Section 3.6* was based on traffic associated with cumulative growth in the northern Lake Tahoe area. As such, the traffic analysis represents a cumulative analysis.

Traffic analysis for Alternatives 2 and 4 for the proposed SR 28 improvements (Section 3.6) indicates that there will be a reduction of traffic capacity on SR 28 in both the short term (through the year 2008), and the long term (through the year 2028). Under each of these alternatives, the LOS on SR 28 degrades to a level F on a limited number of peak travel days (specifically, 10 days per summer in the peak direction) during the summer season beginning in 2008. By the year 2028, the LOS on SR 28 degrades to a level F for virtually all days in the summer, and for up to 11 hours per day. Under both of these modeling scenarios, queuing of traffic would occur along the SR 28 roadway segments in the commercial core area. It is expected that traffic would divert through the neighboring side streets to avoid the queuing and delays. This breakdown in LOS will result in direct short- and long-term cumulative effects on traffic flow and capacity and would result in up to 4,000 vehicles per day on local residential streets. Due to the added congestion associated with Alternatives 2 and 4, the additional delay would also have a significant and unavoidable delay to transit operations, resulting in a substantial cumulative effect.

Traffic analysis for the Alternative 3 for the proposed SR 28 improvements (Section 3.6) indicates that there will be no unacceptable LOS or traffic queuing in either the short-term (through 2008) or the long-term (through 2028). Adequate traffic capacity under each of these modeling scenarios is maintained by this alternative. There would be no short- or long-term direct or indirect cumulative effects associated with this alternative. It should be noted that an updated warrant analysis conducted for this environmental analysis has indicated that a signal at Fox Street and Deer Street may be warranted for future years. However, the determination of traffic control devices at these intersections will be considered as a separate roadway improvement project.

4.3.2.7 **Parking**

The parking analyses (*Section 3.7*) indicates there would be no direct effects on parking as a result of either build alternative. This is because Placer County, as part of this project, has committed to compensating for the effects of lost parking spaces for either build alternative. There are no other proposed projects in the Kings Beach area that would require a substantial demand for parking. Therefore, there are no known long-term cumulative parking impacts associated with cumulative growth in the Kings Beach area.

4.3.2.8 Land Use

The land use analysis finds that each of the build alternatives would require partial acquisitions of properties along the SR 28 corridor. However, for each build alternative, these acquisitions s are not considered substantial. New parking lots and spaces would be needed to compensate for parking spaces taken by the project. The required parking would include both on-street (but off of SR 28) and off-street parking. The parking lots would also require land use acquisitions. The land use acquisitions associated with the partial acquisitions of property and to site parking lots are not considered to be substantial direct impacts. Although a few other land use development projects are proposed for Kings Beach—Kings Beach Mixed Use Village, Kings Beach Student Activity Center—

the land use demands for these projects are relatively small and would not constitute a substantial cumulative land use impact when combined with the proposed action.

4.3.2.9 Noise

The noise analysis (*Section 3.9*) was based primarily on traffic volumes estimated for the traffic analysis (*Section 3.6*). The traffic volumes in the traffic analysis were based on cumulative growth in the northern Lake Tahoe area. Consequently, the noise analysis was also based on cumulative growth and represents cumulative effect conditions. As indicated in Tables 3.9-7 and 3.9-8, implementation of the build alternatives is not expected to result in noise increases relative to the no-project alternative. Consequently, because no noise increases are associated with the build alternatives, implementation of the proposed project would not result in a cumulative increase in traffic noise.

4.3.2.10 Recreation

The recreation analysis finds that each build alternative would not affect recreational resources in the Kings Beach area. Several projects proposed for the Kings Beach area would enhance recreation, while none of the proposed projects would have negative recreational impacts. Consequently, none of the three build alternatives would have a substantial direct or cumulative effect on recreation when considered with other proposed projects for the area.

4.3.2.11 Public Services and Utilities

The public services and utilities analysis finds that each build alternative would either have no effect or no adverse effect on public services and utilities in the Kings Beach area. None of the proposed projects in the Kings Beach area would have negative effects on public services or utilities. Consequently, none of the three build alternatives would have a substantial direct or cumulative effect on public services and utilities when considered with other proposed projects.

4.3.2.12 Geology and Soils

The geology and soils analysis finds that each build alternative would either have no substantial effects or would have substantial effects that can be mitigated. Several soil conservation and erosion control projects are proposed for the Kings Beach area (see Tables 4-1 through 4-3). Although some of the proposed land use projects in the area could have effects on soils, those effects would be relatively minor and would not result in substantial effects on geology and soils when considered with the proposed project. Consequently, with appropriate mitigation, none of the three build alternatives would have a substantial direct or cumulative effect on geology and soils.

4.3.2.13 Water Quality

One of the purposes of the proposed action is to improve water quality. Several other proposed projects in the vicinity of the proposed action are also designed to improve water quality. Those include projects sponsored by Placer County, Caltrans, TRPA, and the Nevada Department of Transportation (Tables 4-1 through 4-3).

Placer County is preparing a Watershed Improvement Project that is designed to improve water quality throughout the entire Kings Beach watershed, which includes the boundaries of the action area. Three main treatment options are being evaluated as part of that effort. Note that each of the treatment alternatives proposes a different approach for the type of treatment: localized runoff, basinwide, and regional.

Localized Runoff Approach

The proposed runoff treatment includes a localized approach to solve the identified water quality problems in the action area. This approach would reduce flow volume and promote infiltration along the sub-basins through a new series of BMPs including vegetated swales, infiltration galleries, and detention basins. Runoff from a city-block-sized area would be treated with these BMPs. Runoff from the adjacent forest will continue to enter the action area. There would be no forest runoff treatment under this alternative.

Conveyance-related improvements proposed in this alternative would include roadside ditches, vegetated swales, rock swales, and rock-lined channels. These features would convey water and also promote infiltration, thereby reducing the flow. The improvements would be installed on all of the streets in the urban area. Vegetated swales would also be constructed at locations along SR 267 to direct runoff to an existing sediment basin near the golf course.

Detention basins, infiltration galleries, and sediment traps would be constructed at several locations in each subbasin to promote infiltration. Each BMP would treat the runoff from a one- to two-city-block area. The type of runoff collection methods selected would be based on available land. Infiltration galleries would be installed along Secline Street and Coon Street. Sediment traps and vaults would be built just upstream of six existing storm drain discharge points to the lake. Runoff from the short section of Speckled Avenue and Dolly Varden Avenue between SR 267 and Wolf Street would be collected in sediment traps before discharge to Griff Creek.

Existing storm drains would continue to release treated runoff to Lake Tahoe. The level of treatment would be higher than under existing conditions.

Basinwide Approach

The second approach consists of a basinwide approach to collecting and treating runoff that would be conveyed through the action area. Runoff in the urban area would be directed to treatment facilities sited closer to SR 28 than under the localized runoff approach. Runoff would be collected from most of the subbasin before it receives treatment in a basin.

This alternative proposes an earthen berm to direct sheet flow upslope of Speckled Avenue to Griff Creek or Coon Creek. A separate berm on the east would collect water from the forest portion of the Cutthroat, Beaver, and Park subbasins and direct it to collection facilities near the commercial core. The berm will divert forest flows to a

collection facility near SR 28 and then to Lake Tahoe. This eastern berm is used along the length of the urban area.

Conveyance-related improvements proposed for the basinwide approach include roadside ditches, vegetated swales, rock swales, curb and gutter, and storm drains. Roadside ditches and curb and gutter would be used to convey runoff on all of the urban streets. Curb and gutter would tie into existing curbs and on the streets near SR 28. Rock and vegetated swales would be installed at several locations to promote infiltration.

Urban runoff would be collected at low points midslope in watersheds and subbasins at proposed detention basins or existing sediment basins for infiltration to reduce flow and reduce sediment. Overflow and runoff would be collected at other proposed detention basins or existing sediment basins near the base of the watersheds/subbasins. Sediment traps and vaults would be installed just upstream of six existing storm drain discharge points to the lake. Runoff from the short section of Speckled Avenue and Dolly Varden Avenue between SR 267 and Wolf Street would be collected in sediment traps before discharge to Griff Creek.

Existing storm drains would continue to release treated runoff to the lake. The level of treatment will be higher than under existing conditions.

Regional Approach

The third treatment alternative proposes to collect and convey runoff using curb and gutter and storm drains installed in the action area to primary collection points. The runoff would then be conveyed from the collection points to a regional stormwater treatment facility.

This third alternative proposes to use earthen berms to direct sheet flow from the forested areas north of Speckled Avenue to Griff Creek. This would separate the forest runoff from runoff generated in the urbanized area. Currently, the forest in the Coon subbasin flows to the Coon Street SEZ channel near Speckled Avenue and Fox Street. Because of the slope of the subbasin, this runoff would not be collected by the berm but would

continue to enter the urban area and be conveyed in the Coon Street SEZ. Within the urban area, urban runoff would be conveyed away from the Coon Street SEZ to prevent comingling with the forest runoff.

To the east, this alternative proposes to use an earthen berm at the margins between the forest and urbanized area to direct sheet flow that originates in the forested area. The berm would divert forest flows to a collection facility near SR 28 and then to Lake Tahoe.

Conveyance-related improvements proposed in this third alternative include curb and gutter, new storm drains and pretreatment areas, and new drainage inlets. Curb and gutters are proposed on all roads to convey runoff along the street to the nearest intersection, where drop inlets are proposed. These new drop inlets would collect and direct runoff from the gutters to new storm drain under all of the north/south running roads. The runoff would be conveyed to collection facilities near SR 28.

This alternative proposes to collect the storm drain flow at five pretreatment vault/lift stations. The vaults would provide pretreatment by settling out coarse materials and provide temporary runoff storage. The runoff would be pumped from the vaults through a new force-main line under SR 28, Secline, and Wolf streets to a regional treatment facility proposed in the city block bounded by Speckled Avenue, Cutthroat Avenue, Wolf Street, and Deer Street. Runoff from the short section of Speckled Avenue and Dolly Varden Avenue between SR 267 and Wolf Street would be collected in sediment traps before being discharged to Griff Creek.

Following treatment, the runoff would be discharged through a new pipeline under Deer Street to Lake Tahoe near the existing Deer Street outfall. This would be a closed line and would not pick up any runoff between the treatment plant and the lake.

Best Management Practices

In addition to the implementation of one of the three watershed improvement alternatives discussed above, all projects within the Lake Tahoe Basin are required to implement

BMPs to protect water quality from impacts related to temporary construction activities and permanent site improvements. Regulatory agencies that have applicable BMP guidance documents for the proposed action include the following:

- The Handbook of Best Management Practices (Tahoe Regional Planning Agency 1988);
- TRPA Best Management Practices Retrofit Program;
- TRPA Erosion Control Team's general information;
- BMP Contractors Notes (Tahoe Regional Planning Agency 2005);
- TRPA guidance for BMP installation developed to incorporate advancing technology;
 and
- Storm Water Quality Manuals: Construction Site Best Management Practices (BMPs) Manual (Nevada Department of Transportation 2004).

TRPA requires that projects address water quality by reducing the projected level of contaminant loading. Untreated urban runoff from parking lots and roads does not typically meet the numeric standards for discharge to surface water. The following list of contaminant types and associated sources are considered during project design and construction.

- Sediment-related issues: sediment generated from erosion during storm events and from increased flow due to additional coverage and sediment generated during construction.
- Nutrient-related issues: nutrients transported with sediment, atmospheric deposition,
 organic matter (e.g., leaves, grass clippings), and landscape fertilizer.
- Trash-related issues: debris from construction and debris deposited by facility users.
- Oil- and grease-related issues: oil and grease deposited by vehicles present on site during construction and facility use.

• Toxic contaminant-related issues: concrete washing during construction, paving during construction (e.g., loose gravels, sealants), materials used in structures (e.g., paint, wood preservatives), and landscape pesticides.

To address the potential generation of contaminated stormwater discharges, each component of the proposed action must implement temporary and permanent source control BMPs. Temporary BMPs are applied during and immediately after the construction period. Permanent BMPs involve the design, installation, and maintenance of structural features intended to remain functional over the projected life of the proposed development. BMPs are formally incorporated into the plans and specifications prepared for each project component.

In general, the conscientious application and maintenance of temporary BMPs has been demonstrated to protect water quality during the construction period and reduce effects on water quality to less-than-substantial levels. The minimum temporary BMPs needed to be consistent with TRPA and Caltrans guidance documents referenced above and to satisfy TRPA Code requirements (Chapters 25, 64, and 81) are outlined in Table 4-4.

Table 4-4. Temporary Best Management Practices

Temporary Best Management Practices (BMP-T)		
Temporary construction site practices (BMP-TCS)	Temporary soil stabilization practices (BMP-TSS)	
Development site plan (BMP-1)	(non-vegetative)	
Grading season (BMP-2)	Straw mulch (BMP-15)	
Boundary fencing (BMP-4)	Hydromulch (BMP-16)	
Stabilized construction entrance (BMP-6)	Pine needle mulch (BMP-17)	
Protection of trees and other vegetation (BMP-8)	Jute netting (BMP-18)	
Temporary sediment barriers (BMP-TSB)	Plastic netting (BMP-19)	
Straw bale sediment barriers (BMP-9)	Wood excelsior blanket (BMP-20)	
Filter fencing (BMP 10)	Erosion control blankets or geotextiles (BMP-21)	
Straw bale drop inlet sediment barrier (BMP-11)	Chemical mulches and tackifiers (BMP-22)	
Sandbag curb inlet sediment barrier (BMP-12)	Temporary runoff control on slopes (BMP-TD)	
Filter berm (BMP-13)	Diversion dike (BMP-23)	
Siltation berm (BMP-14)	Interceptor swale (BMP-28)	
Temporary and/or permanent sediment retention structures	Diversion swale (BMP-24) - Interception dike (BMP-27)	
Sediment trap (BMP-33)		
Source: Tahoe Regional Planning Agency 1988.		

This project alone cannot be expected to meet all of the TRPA thresholds. As noted above, Caltrans contributes only 2.4% of the runoff in HAS 634.20 from its road surfaces. This includes runoff from routes 28, 89 and 267. The amount of runoff from SR 28 is only a fraction of this 2.4%. However, the proposed action will greatly improve stormwater treatment on and along SR 28. Newly installed drainage facilities will capture many pollutants before they enter the lake. These improvements will greatly outweigh any negative impacts associated with newly created impervious surfaces. No cumulative adverse impacts are anticipated. When the proposed action is considered in combination with either of the watershed improvement alternatives, and with other water quality improvements proposed by other agencies, the proposed action, would result in a cumulative improvement in water quality.

4.3.2.14 Visual Resources

The visual analysis finds that each build alternative would either have no substantial effects or substantial effects that can be mitigated. Any cumulative visual impacts of the project alternatives would be limited to the Kings Beach area. No other projects in the area (see Tables 4-1 through 4-3) would result in visual impacts that, when considered with each project alternative, would result in significant cumulative effects.

Consequently, with appropriate mitigation, none of the three build alternatives would

have substantial direct or cumulative effects on visual resources.

4.3.2.15 Biological Resources

The biology analysis finds that each build alternative would have substantial direct effects on biological resources. Each of these effects would be limited to the construction period and would occur within the vicinity of that construction. No adverse effects on biological resources were identified for project operation. Several projects proposed for the Kings Beach area are designed to improve biological resources, such as the Griff Creek Stream Restoration project, the East of Kings Beach Boat Ramp Spawning Habitat Restoration project, and several Tahoe Conservancy Restoration Enhancement projects. Although there are a few other land use development projects proposed for Kings Beach, they would not result in cumulative long-term biological effects. Because the proposed action's effects on biological resources would be short-term and limited to the project area, because all of these effects can be mitigated, and because there are no other cumulative projects likely to cause substantial effects, the cumulative effects on biological resources would not be substantial.

4.4 Short-Term Uses and Long-Term Productivity

This section describes the relationship between the short-term use of resources versus the long-term maintenance and enhancement of productivity. Short-term effects are those that occur during and immediately after the construction period. Long-term effects relate to the remaining life of the proposed action. The issue is whether either of the proposed build alternatives narrows the range of beneficial uses of the environment, poses long-

term risks to health or safety, or detracts from the ability to attain and maintain environmental thresholds.

Construction activities related to the proposed action will result in short-term loss of land use and impacts on soils, water quality, air quality, noise levels, recreation, scenic, and biological resources. Impacts will be rectified through the implementation of the mitigation measures discussed in *Sections 3.1 through 3.17* of the Final EA/EIR/EIS. The short-term costs also include the commitment of substantial financial and material resources. Long-term commitments of resources are associated with maintenance and operation of the proposed action.

The build alternatives are expected to improve bicycle and pedestrian circulation, and preserve scenery and water quality needs within the Kings Beach Commercial Core area. The benefits to long-term productivity are expected to offset short-term effects of the proposed build alternatives.

4.5 Irreversible and Irretrievable Commitments of Resources

This section describes the irreversible and irretrievable commitment of resources if the either of the build alternatives is constructed. When actions change an area to the point that it cannot be restored to its original undisturbed condition, it is considered an irreversible commitment of resources. When actions consume resources that cannot be retrieved, it is considered to be an irretrievable commitment of resources.

Each of the Alternatives would create few irreversible commitments of resources. The proposed construction activities along SR 28 would occur within the paved travel lane of the existing highways and be restored to original condition or better when construction is completed, such that no irreversible impacts would be incurred. Most project impacts are temporary and will not create irreversible changes in air quality, noise, traffic patterns, or water quality. Exceptions include the minor loss of vegetation from areas of new impervious coverage, minor alterations of wildlife habitat from removal of trees, and a slight increase in visibility of structures at areas of proposed off-street parking. Materials

needs.

employed during construction, as well as the consumption of nonrenewable energy sources during construction, are considered an irretrievable loss directly attributed to the proposed action, and the use of these resources would preclude the availability for other